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OSTRACODS OF THE FAMILIES
LEPERDITELLIDAE, DREPANELLIDAE,
GLYPTOPLEURIDAE, KLOEDENELLIDAE,
BAIRDIIDAE, BARYCHILINIDAE,
AND THLIPSURIDAE
FROM THE GENSHAW FORMATION
OF MICHIGAN

BY

ROBERT V. KESLING and JOHN E. KILGORE



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INTRODUCTION

THE ostracods described in this paper belong to the families Leperditellidae, Drepanellidae, Glyptopleuridae, Kloedenellidae, Bairdiidae, Barychilinidae, and Thlipsuridae and are from the Genshaw formation of the Middle Devonian Traverse group of Michigan. The faunule includes ten genera, all previously described, and eighteen species, of which two have been described and sixteen are new. The only previous record of ostracods from the Genshaw formation is in A. S. Warthin's study (1934), in which he described certain ostracods of the entire Traverse group.

All specimens described in this paper are from a sample of a bed of the Genshaw formation which contains numerous brachiopods of the variety *Cyrtina umbonata* var. *alpenensis* Hall and Clarke. The sample was obtained in 1950 by George M. Ehlers and Robert V. Kesling. The types and specimens are catalogued and deposited in the Museum of Paleontology of the University of Michigan.

REGISTER OF LOCALITY

Dark gray shale containing many brachiopods of the variety *Cyrtina umbonata* var. *alpenensis* Hall and Clarke, about three feet below the black Killians limestone member, outcropping in a road cut and ditch on the west side of Long Lake about one-half mile south of LeRoy's Resort, at the junction of West Long Lake Road and the entrance to Martin's Resort, near center W. $\frac{1}{4}$ sec. 32, T. 33 N., R. 8 E., Presque Isle County, Michigan.

SYSTEMATIC DESCRIPTIONS

Phylum ARTHROPODA

Class CRUSTACEA

Order OSTRACODA

Superfamily Leperditioacea

Family Leperditellidae Ulrich and Bassler 1906

Genus *Macronotella* Ulrich 1894

Genotype.—By original designation, *Macronotella scofieldi* Ulrich 1894, pp. 683–84; Pl. 43, Figs. 30–34.

***Macronotella hypercala*, sp. nov.**

(Pl. I, Figs. 25–36)

Description.—Carapace subelliptical. Hinge line straight. Dorsal border straight; anterior, ventral, and posterior borders rounded. Left valve slightly overlapping right in marginal area. Valves convex, greatest width central. Narrow rim around free border.

Anterior and posterior cardinal angles approximately 125 degrees.

Surface ornamentation consisting of coarse pits on both valves. A central spot and the marginal area smooth. Size of pits relatively constant on entire lateral surface. No concentric arrangement of pits.

Smooth spot probably external to the position of an adductor muscle scar.

Dimensions of holotype, a carapace: length, .87 mm.; height, .67 mm.; and width, .50 mm.

Remarks.—This species differs from *Macronotella dubia* (Tolmachoff) (Tolmachoff, 1926, p. 28, Pl. 1, Figs. 22, 23) in having all pits the same size and not arranged in concentric rows.

The name of this species is derived from Greek ὑπερκalos (“exceedingly beautiful”) and refers to the ornamentation.

Types.—Holotype, a complete carapace, No. 27955; paratypes, eight complete carapaces, Nos. 27956–27963.

Genus *Schmidtella* Ulrich 1892

Genotype.—By original designation, *Schmidtella crassimarginata* Ulrich 1892, p. 269; Pl. 9, Figs. 27–30.

***Schmidtella fabiformis*, sp. nov.**

(Pl. II, Figs. 1–7)

Description.—Carapace subovate; slightly inequivalved, the right valve overlapping the left along the ventral border. Hinge line straight. Dorsal

border slightly convex dorsally, anterior and posterior borders sharply rounded, ventral border broadly rounded. Valves broadly unbonate. Greatest width in dorsal part of carapace. In anterior view, hinge line depressed below dorsal border of each valve. Both valves nonsulcate.

Anterior cardinal angle approximately 110 degrees; posterior cardinal angle approximately 120 degrees.

Surface smooth.

Dimensions of holotype, a carapace: length, .47 mm.; height, .37 mm.; and width, .27 mm.

Remarks.—This species differs from *Schmidtella umbonata* Ulrich (Ulrich, 1894, p. 641, Pl. 45, Figs. 36–38) in having a longer hinge line, less curvature of the dorsal border, greatest convexity in dorsal region, and anterior and posterior borders more sharply rounded.

The name of this species is derived from Latin *faba*, f. (“a bean”) and refers to the general shape of the carapace.

Types.—Holotype, a complete carapace, No. 27964; paratypes, three complete carapaces, Nos. 27965–27967.

Superfamily Beyrichiacea

Family Kloedenellidae Ulrich and Bassler 1923

Genus *Kloedenella* Ulrich and Bassler 1908

Genotype.—*Kloedenia pennsylvanica* Jones, 1889, p. 341, Figs. 5a–d, 6 (not 7a–b, 8, or 9), by subsequent designation of Ulrich and Bassler, 1908, p. 304, Fig. 54; pp. 318, 340; Pl. 43, Figs. 1–3.

***Kloedenella chilota*, sp. nov.**

(Pl. I, Figs. 1–8)

Description of female.—Carapace subelliptical. Dorsal border straight. As seen in dorsal view, right valve overlapping left along front part of hinge line and anterodorsal border. Elongate vertical sulcus just in front of center, extending from dorsal border one-fourth the distance to the ventral border on both valves. Shallow, V-shaped depression in anterodorsal corner of both valves. Dorsal border straight, anterior border rounded, subacuminate in middle part, ventral border nearly straight to posterior one-third of valve, then curving dorsally to the rounded posterior border. Greatest height anteroventral, greatest width posteroventral. Sharp broad marginal rim extending around both valves, widest in anterior part. No velate structure. Lateral outline in dorsal view evenly curved.

Anterior cardinal angle approximately 120 degrees; posterior cardinal angle approximately 110 degrees.

Surface of both valves smooth.

Dimensions of holotype, a carapace: length, 1.09 mm.; height, .61 mm.; and width, .45 mm.

Description of male.—General shape of carapace, hinge line, overlap, sulcus, and ornamentation like those of female. Carapace less elongate than that of female. Rounded depression in anterodorsal corner of both valves. Dorsal border straight, anterior border broadly rounded, ventral border rounded and curving dorsally in posterior one-third of valve meeting the rounded posterior border.

Anterior cardinal angle approximately 130 degrees; posterior cardinal angle approximately 110 degree.

Dimensions of allotype, a carapace: length, 1.01 mm.; height, .61 mm.; and width, .42 mm.

Remarks.—This species differs greatly from others of this genus in having a broad marginal rim.

The name of this species is derived from Greek χείλος, n. ("a lip, a rim") and refers to the marginal rim.

Types.—Holotype, a complete female carapace, No. 27943; allotype, a complete male carapace, No. 27944; paratypes, two complete male carapaces, Nos. 27945–27946.

***Kloedenella lophota*, sp. nov.**

(Pl. I, Figs. 9–20)

Description of female.—Carapace subrectangular, elongate. Hinge line straight. Right valve overlapping left, overlap most pronounced on anterior and posterior dorsal corners and posteroventral part. Posterocentral part of hinge line depressed. Deep wedge-shaped sulcus slightly anterior, dorsally acuminate and widest at its ventral end, separated from dorsal border by a ridge. Dorsal border rounded in posterior two-thirds of valve, nearly straight in anterior one-third. Anterior and posterior borders broadly rounded, ventral border slightly rounded. Sharp, narrow, curved ridge along posterior two-thirds of the dorsal part of each valve, parallel to hinge line in dorsal view. Anterior part of ridge curving across dorsal end of sulcus, then slightly downward, becoming obscure on lateral surface above and slightly anterior to sulcus. Very small marginal ridge around free edge. Ventral ridge along anterior and ventral borders. Greatest width postero-central.

Anterior cardinal angle approximately 125 degrees; posterior cardinal angle approximately 110 degrees.

Surface very finely punctate, ridges smooth.

Dimensions of holotype, a carapace: length, .90 mm.; height, .53 mm.; and width, .39 mm.

Description of male.—General shape of carapace, hinge line, overlap, sulcus, and ornamentation like those of female. Carapace less elongate than that of female.

Anterior cardinal angle approximately 125 degrees; posterior cardinal angle approximately 100 degrees.

Dimensions of allotype, a carapace: length, .80 mm.; height, .55 mm.; and width, .35 mm.

Remarks.—This species differs from those previously described in the size and shape of the dorsal ridge.

The name of this species is derived from Greek λοφος, m. ("a crest") and refers to the curved ridge in the dorsal part of each valve.

Types.—Holotype, a complete female carapace, No. 27951; allotype, a complete male carapace, No. 27949; paratypes, a complete female carapace, No. 27952, and three complete male carapaces, Nos. 27947, 27948, 27950.

Kloedenella emphysota, sp. nov.

(Pl. I, Figs. 21–24)

Description of female.—Carapace subrectangular, elongate. Hinge line straight. Right valve slightly overlapping left along anterior and ventral borders. Small sulcus in anteroventral part of both valves, separated from dorsal border by a ridge. Dorsal border straight along two-thirds of distance, slightly curved dorsally in posterior one-third. Anterior border broadly rounded, ventral border nearly straight, and posterior border slightly rounded. Posterior one-third of both valves tumid. In dorsal view, a sharp ridge on each valve nearly parallel to hinge line except at its ends which curve toward the hinge line. Greatest height and width posterior.

Anterior cardinal angle approximately 120 degrees; posterior cardinal angle approximately 100 degrees.

Surface smooth except for fine striations parallel to free border in anteroventral part of valve.

Dimensions of holotype, a carapace: length, .84 mm.; height, .45 mm.; and width, .42 mm.

Male unknown.

Remarks.—This species differs from *Eukloedenella doverensis* Turner (Turner 1939, p. 20, Pl. 1, Figs. 5, 8) in having a smaller sulcus, more tumid posterior part, and striations in anteroventral part.

The name of this species is derived from Greek ἐμφυσω, ("to inflate") and refers to the large posterior half of the carapace.

Types.—Holotype, a complete female carapace, No. 27953; paratype, a complete female carapace, No. 27954.

***Kloedenella opisthorhysa*, sp. nov.**

(Pl. II, Figs. 22–26)

Description of female.—Carapace subrhomboidal. Hinge line straight. Right valve overlapping left except in posterior half of dorsal border. In dorsal view, ends of right valve overlapping those of left valve in broad flexures. Deep elongate sulcus extending from anterodorsal border nearly one-half the distance to the ventral border on both valves. Very shallow depression or flattening on anterodorsal corner. Posterior half of both valves tumid. Greatest height and width posteroventral. Narrow sharp-edged marginal rim extending around both valves. Velate ridge around anterior and ventral borders to posteroventral part of free border. Narrow channel between marginal and velate ridges.

Anterior cardinal angle approximately 135 degrees; posterior cardinal angle approximately 120 degrees.

Surface of both valves finely punctate with longitudinal ridges in posterior tumid part.

Dimensions of holotype, a carapace: length, .93 mm.; height, .52 mm.; and width, .51 mm.

Description of male.—General shape of carapace, hinge line, overlap, sulcus, and ornamentation same as those of female. Carapace less elongate and posterior part less tumid than that of female.

Anterior cardinal angle approximately 130 degrees; posterior cardinal angle approximately 120 degrees.

Surface of both valves finely punctate with fine longitudinal ridges in posterior part.

Dimensions of allotype, a carapace: length, .84 mm.; height, .51 mm.; and width, .39 mm.

Remarks.—This species is characterized by the fine longitudinal ridges in the posterior part of each valve.

The name of this species is derived from Greek ὀπισθο- (“behind, backward”) and ῥυσο- (“shrivelled, wrinkled”) and refers to the ornamentation of the posterior part of the carapace.

Types.—Holotype, a complete female carapace, No. 27978; allotype, a complete male carapace, No. 27977; paratype, a complete male carapace, No. 27976.

Family Drepanellidae Swartz 1936

Genus *Bollia* Jones and Holl 1886

Genotype.—By original designation, *Bollia bicollina* Jones and Holl 1886, pp. 360–61; Pl. 12, Figs. 14 a–c, 15, 16.

***Bollia disjuncta*, sp. nov.**

(Pl. II, Figs. 8-13)

Description.—Carapace subovate; approximately equivalved. Hinge line straight. Anterior border broadly rounded, ventral border rounded, posterior border bluntly rounded. Broad velate ridge extending from anterior part of the dorsal border to the posterior part. Ridge forming the free border anteriorly and ventrally, diverging from border posteroventrally, from there parallel to posterior border. Large U-shaped ridge, narrow anteriorly and ventrally, posteriorly forming an elongate bulb. Dorsal extremities of U-shaped ridge extending above hinge line. Anterior end of ridge sloping posteriorly, posterior bulb nearly vertical. Posteroventral part of ridge low, saddle-like.

Anterior cardinal angle approximately 115 degrees; posterior cardinal angle approximately 95 degrees.

Ridges smooth, rest of lateral surface very finely punctate between velate and U-shaped ridges. Ventral border with very small, equally spaced marginal spines.

Dimensions of holotype, a carapace: length, .57 mm.; height, (from hinge to ventral border), .33 mm.; and width, .23 mm.

Remarks.—This species is characterized by having the low, saddle-like region in the posteroventral part of the U-shaped ridge.

The name of this species is derived from Latin *disjunctus* ("separate, distinct") and refers to the ventral low part of the U-shaped ridge.

Types.—Holotype, a complete carapace, No. 27971; paratypes, two complete carapaces Nos. 27969-27970 and one right valve No. 27968.

Bollia cf. *B. disjuncta*, sp. nov.

(Pl. II, Fig. 14)

Description.—Carapace subquadrate; approximately equivalved. Hinge line straight. Anterior border broadly rounded, ventral border subrounded, posterior border bluntly rounded. Velate ridge extending from anterior part of the dorsal border to the posterior part. Ridge wider in anterior and posterior parts, narrow along ventral border. Ridge diverging from border anterodorsally, from there parallel to ventral and posterior borders. Large U-shaped ridge, narrow anteriorly and ventrally, the posterior part forming a bulb. Posterior extremity of U-shaped ridge extending farther above hinge line than anterior extremity. Both extremities of ridge nearly vertical. Posteroventral part of ridge low, saddle-like.

Anterior cardinal angle approximately 120 degrees; posterior cardinal angle approximately 100 degrees.

Ridges smooth, rest of lateral surface with small indentations.

Dimensions of holotype, a carapace: length, .63 mm.; height (from hinge to ventral border), .41 mm.

Remarks.—This specimen differs from *Bollia disjuncta*, sp. nov., in having the velate ridge diverge from the border in the anterodorsal part, the ridge being narrower along the ventral border. The over-all size is larger and the outline more subquadrate.

Specimen.—A complete carapace, No. 27972.

Genus *Ulrichia* Jones 1890

Genotype.—By original designation, *Ulrichia conradi* Jones 1890b, p. 544, Fig. 2.

***Ulrichia compressa*, sp. nov.**

(Pl. II, Figs. 15–20)

Description.—Carapace elongate, subrectangular; nearly equivalved. Hinge line straight. Anterior and posterior borders broadly rounded, ventral border gently rounded. Narrow velate ridge paralleling entire free border. Two well-defined small, subcircular nodes in dorsal part of each valve. Posterior node slightly larger than anterior and extending a short distance above the hinge line. Carapace narrow in dorsal view.

Anterior cardinal angle approximately 130 degrees; posterior cardinal angle approximately 120 degrees.

Surface punctate, nodes and marginal ridge smooth.

Dimensions of holotype, a complete carapace: length, .50 mm.; height, .27 mm.; and width, .17 mm.

Remarks.—This species differs from *Ulrichia fragilis* Warthin (Warthin, 1934, p. 213, Pl. 1, Fig. 11) in having the posterior part of the velate ridge next to the posterior border, a more subquadrate outline, distinct ventral borders of the nodes, and no punctae on the nodes.

The name of this species is derived from Latin *compressus* ("squeezed together, compressed") and refers to the narrow carapace.

Types.—Holotype, a complete carapace, No. 27974; paratype, a complete carapace, No. 27973.

Family Glyptopleuridae Girty 1910

Genus *Glyptopleura* Girty 1910

Genotype.—By original designation, *Glyptopleura inopinata* Girty 1910, pp. 236–37.

Glyptopleura cracens, sp. nov.

(Pl. II, Fig. 21)

Description.—Carapace subrectangular to subovate. Hinge line straight. Dorsal border very slightly curved, convex dorsally. Anterior, ventral, and posterior borders broadly rounded. Narrow marginal flange around free border. Faint, vertically elongate pit antero-central part of valve.

Anterior cardinal angle approximately 125 degrees; posterior cardinal angle approximately 110 degrees.

Surface ornamentation consisting of numerous small ridges on most of valve from posterodorsal to anteroventral parts of valve; curved, paralleling free borders on rest of valve. Ridges very closely spaced on anterior, ventral, and posterior borders. Surface pitted between longitudinal ridges.

Dimensions of holotype, a left valve: length, .74 mm.; height, 51 mm.

Remarks.—This species is characterized by the form of the surface ornamentation.

The name of this species is derived from Latin *cracens* ("graceful, neat") and refers to the ornamentation of the valve.

Types.—Holotype, a left valve, No. 27975.

Superfamily Cypridacea

Family Thlipsuridae Ulrich 1894

Genus *Octonaria* Jones 1887

Genotype.—By original designation, *Octonaria octoformis* Jones 1887, p. 404; Pl. 12, Figs. 2 a-b.

Octonaria crescentiformis Van Pelt 1933

(Pl. III, Figs. 27-28)

Octonaria crescentiformis Van Pelt, 1933, p. 334; Pl. 39, Figs. 55-60.

Octonaria crescentiformis Warthin, 1934, p. 218; Pl. 1, Fig. 18.

Strepulites crescentiformis Coryell and Malkin, 1936, p. 5.

Strepulites crescentiformis Warthin, 1945, Card 35, Figs. 55-60.

Types.—Hypotype, a complete carapace, No. 28006.

Octonaria laevilatata, sp. nov.

(Pl. III, Figs. 1-26, 29)

Description.—Carapace subreniform. Hinge line broadly curved, convex dorsally. Left valve strongly overlapping right on all margins.

Right valve: Deeply pitted groove curving convex dorsally one-fourth the distance from the dorsal to ventral border. Shorter pitted groove curving convex dorsally along the middle of the valve; anterior part of groove consisting of one pit, posterior part consisting of two or three pits. Short,

straight, pitted groove in posteroventral one-third of valve consisting of three or four pits. Rounded ridge paralleling borders of grooves and separating the anterior from the posterior groove in the posterocentral part. As seen in dorsal view, the part of the lateral surface with grooves and pits forming a nearly straight line.

Left valve: No surface ornamentation or, at most, with two shallow furrows. Dorsal furrow long in some specimens, curved parallel to the dorsal border, and containing as many as seven pits; ventral furrow short, slightly convex upward, located a little above the middle of the valve, and containing one or two pits. A low curving ridge in the rear one-fourth of the valve, convex toward the posterior.

Dorsal border broadly curved, convex dorsally, anterior and posterior borders curved, subacuminate in middle part, ventral border nearly straight, slightly concave ventrally in middle. Left valve broadly arched, right valve with central part flat and marginal part sloping steeply to free border and hinge. Greatest height central, greatest width posterocentral.

Dimensions of holotype, a carapace: length, .94 mm.; height, .55 mm.; and width, .45 mm.

Remarks.—This species differs from *Octonaria crescentiformis* Van Pelt (Van Pelt, 1933, p. 334, Pl. 39, Figs. 55–60) in having a smooth or at most two-furrowed left valve, larger size, more pronounced overlap, and arching of left valve in dorsal view. A gradation was found from forms with an unornamented left valve to those having some ornamentation on the left as illustrated (Pl. III, Figs. 6–26). The majority (over 90 per cent) of specimens studied had no ornamentation at all on the left valve.

The name of this species is derived from Latin *laevis* ("smooth") and *latus*, n. ("the side") and refers to the smooth side of the left valve in most specimens.

Types.—Holotype, a complete carapace, No. 27992; paratypes, thirteen complete carapaces, Nos. 27993–28005.

Genus *Euglyphella* Warthin 1934

Genotype.—*Strepsula sigmoidalis* Jones, 1890a, p. 11; Pl. 2, Fig. 4, by subsequent designation of Warthin, 1934, p. 220; Pl. 1, Fig. 21.

Euglyphella sigmoidalis (Jones)

(Pl. III, Figs. 30–36)

Strepsula sigmoidalis Jones, 1890a, p. 11; Pl. 2, Fig. 4.

Strepsula plantaris Jones, 1890b, p. 540; Pl. 20, Fig. 8.

Octonaria percarinata Van Pelt, 1933, p. 335; Pl. 39, Figs. 52–54.

Euglyphella sigmoidalis Warthin, 1934, p. 220; Pl. 1, Fig. 21.

Euglyphella sigmoidalis Bassler and Kellett, 1934, pp. 37, 311, Fig. 16.

Euglyphella sigmoidalis Coryell and Malkin, 1936, p. 7, Fig. 17.

Euglyphella sigmoidalis Warthin,, 1945, Card 78, Fig. B.

Euglyphella sigmoidalis Wright, 1948, p. 101; Pl. 12, Figs. 36-37.

Types.—Hypotypes, seven complete carapaces, Nos. 28007-28013.

Family Barychilinidae Ulrich 1891

Genus *Barychilina* Ulrich 1891

Genotype.—By original designation, *Barychilina punctostriata* Ulrich 1891, p. 199; Pl. 13, Figs. 1 *a-e*, 2 *a-c*.

***Barychilina tryphera*, sp. nov.**

(Pl. II, Figs. 27-30)

Description.—Carapace subrhomboidal. Hinge line curving very slightly, convex dorsally. Right valve overlapping left except in posterior half of dorsal border. Well-defined, deep, elongate pit in dorsocentral part of both valves. Surface of both valves exhibiting very fine, inosculating ridges. Sharp marginal rim extending around both valves. Surface of both valves punctate between ridges. Greatest height antero-central, greatest width postero-central.

Dimensions of holotype, a carapace: length, .68 mm.; height, .39 mm.; and width, .29 mm.

Remarks.—This species differs from *Barychilina labyrinthea*, sp. nov., in having smaller size, fewer and smaller ridges, and more elongate valves.

The name of this species is derived from Greek τρυφερός ("delicate, dainty") and refers to the surface ornamentation.

Types.—Holotype, a complete carapace, No. 27980; paratypes, two complete carapaces, Nos. 27979 and 27981.

***Barychilina labyrinthea*, sp. nov.**

(Pl. II, Figs. 31-35)

Description.—Carapace rhomboidal. Hinge line curved, convex dorsally. Right valve overlapping left except in posterior half of dorsal border. In dorsal view hinge line exhibiting a broad flexure. Well-defined, deep, elongate pit in dorsocentral part of both valves. Surface of both valves exhibiting fine, inosculating ridges except in marginal areas. Sharp marginal rim extending around both valves. Surface of both valves punctate between ridges. Greatest height and width postero-central.

Dimensions of holotype, a carapace: length .77 mm.; height, .55 mm.; and width, .39 mm.

Remarks.—This species differs from *Barychilina pulchella* Ulrich

(Ulrich 1891, p. 199, Pl. 13, Figs. 4 *a-d*) in having punctae between the ridges and differs from *Barychilina punctostriata* Ulrich (Ulrich 1891, p. 199, Pl. 13, Figs. 1 *a-e*, 2 *a-c*) in having a more random arrangement of the ridges on the valves.

The name of this species is derived from Greek λαβυρινθος, m. ("a labyrinth, a maze") and refers to the pattern of the small ridges on the surface.

Types.—Holotype, a complete carapace, No. 27985; paratypes, three complete carapaces, Nos. 27982–27984.

***Barychilina embrithes*, sp. nov.**

(Pl. II, Figs. 36–44)

Description.—Carapace rhomboidal. Hinge line curved, convex dorsally. Right valve thick and completely overlapping left on all borders. overlap most pronounced on dorsal, posterior, and ventral borders. In dorsal view hinge line exhibiting a broad flexure. Well-defined, deep anterodorsal pit on both valves. Surface of both valves, except in anterior part and around the borders, with coarse, inosculating, oblique ridges. Anterior part of both valves punctate with punctae also present between the ridges on rest of valves. Greatest height and width postero-central.

Dimensions of holotype, a carapace: length, 1.13 mm.; height, .74 mm.; and width, .61 mm.

Remarks.—This species differs from *Barychilina pulchella* Ulrich (Ulrich 1891, p. 199, Pl. 13, Figs. 4 *a-d*) in having small punctae between the ridges and differs from *Barychilina punctostriata* Ulrich (Ulrich 1891, p. 199, Pl. 13, Figs. 1 *a-e*, 2 *a-c*) in having much coarser ridges on the lateral surface of both valves.

The name of this species is derived from Greek ἐμβριθης ("heavy") and refers to the thick valves.

Types.—Holotype, a complete carapace, No. 27989; paratypes, five complete carapaces, Nos. 27986–27988, 27990–27991.

Family Bairdiidae Sars 1887

Genus *Bairdia* McCoy 1844

Genotype.—By original designation, *Bairdia curta* McCoy 1884, p. 164; Pl. 23, Fig. 6.

***Bairdia amplexens*, sp. nov.**

(Pl. IV, Figs. 1–3)

Description.—Carapace bairdioid, short, subovate. Hinge line curving, convex dorsally. Left valve overlapping right on all borders. Overlap of

left valve extending to ends and covering ventral overlap. Dorsal border high and nearly straight centrally, curving broadly anteriorly and posteriorly meeting acuminate anterior and posterior ends. Valve nearly symmetrical in lateral view. Anterior and posterior ends curving slightly dorsally. Greatest height and width central.

Surface smooth.

Dimensions of holotype, a carapace: length, 1.04 mm.; height, .52 mm.; and width, .35 mm.

Remarks.—This species differs from *Bairdia leguminoides* Ulrich (Ulrich, 1891, p. 197, Pl. 17, Figs. 5 *a-c*) in having no faintly marked central spot on right valve, less pronounced ventral overlap, and more acuminate posterior end.

The name of this species is derived from Latin *amplectens* ("embracing") and refers to the overlap of the left valve.

Types.—Holotype, a complete carapace, No. 28014; paratype, a complete carapace, No. 28015.

***Bairdia emaciata*, sp. nov.**

(Pl. IV, Figs. 4-8)

Description.—Carapace bairdioid, elongate. Hinge line curving, convex dorsally. Left valve overlapping right on all borders, slightly more pronounced overlap along dorsal border. Dorsal border high and nearly straight centrally, curving broadly anteriorly and posteriorly meeting the strongly acuminate anterior and posterior ends. Ventral border curving broadly from ends, nearly straight in central part. Anterior end curving dorsally, posterior end nearly straight. Greatest height and width nearly central.

Surface smooth.

Dimensions of holotype, a carapace: length, 1.55 mm.; height, .61 mm.; and width, .37 mm.

Remarks.—This species differs from *Bairdia summacuminata* Coryell and Malkin (Coryell and Malkin, 1936, p. 9, Fig. 23) in having a flatter centrodorsal border, a straighter posterior end, less pronounced dorsal overlap, and a nonpunctate surface.

The name of this species is derived from Latin *emaciatus* ("emaciated") and refers to the narrow carapace.

Types.—Holotype, a complete carapace, No. 28016; paratypes, three complete carapaces, Nos. 28017-28019.

***Bairdia gibbera*, sp. nov.**

(Pl. IV, Figs. 9-17)

Description.—Carapace subtriangular. Hinge line slightly curved, convex dorsally. Right valve overlapping left on all borders, overlap most pronounced on dorsal and posterior borders. As seen from above, dorsal and posterodorsal parts of right valve overlapping left for nearly one-half the width of the carapace in two broad lobes. Rounded, low ridge in centro-dorsal part of left valve obscured by overlapping right valve. Dorsal border gently rounded, nearly straight; anterior border broadly rounded, sub-acuminate in the middle part; posterior border nearly vertical for one-fourth distance to ventral border, then sloping more gently meeting ventral border in a blunt acuminate termination of the valves; ventral border straight. Greatest height and width nearly central.

Surface smooth.

Dimensions of holotype, a carapace: length, 1.90 mm.; height, 1.03 mm.; and width, .73 mm.

Remarks.—This species is characterized by its large size and the pronounced indentation in the posterodorsal part of the border.

The name of this species is derived from Latin *gibber* ("hump-backed") and refers to the dorsal part of the carapace.

Types.—Holotype, a complete carapace, No. 28024; paratypes, four complete carapaces, Nos. 28020-28023.

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* The authors have not seen this publication but have examined a reprint dated 1862.

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PLATE I

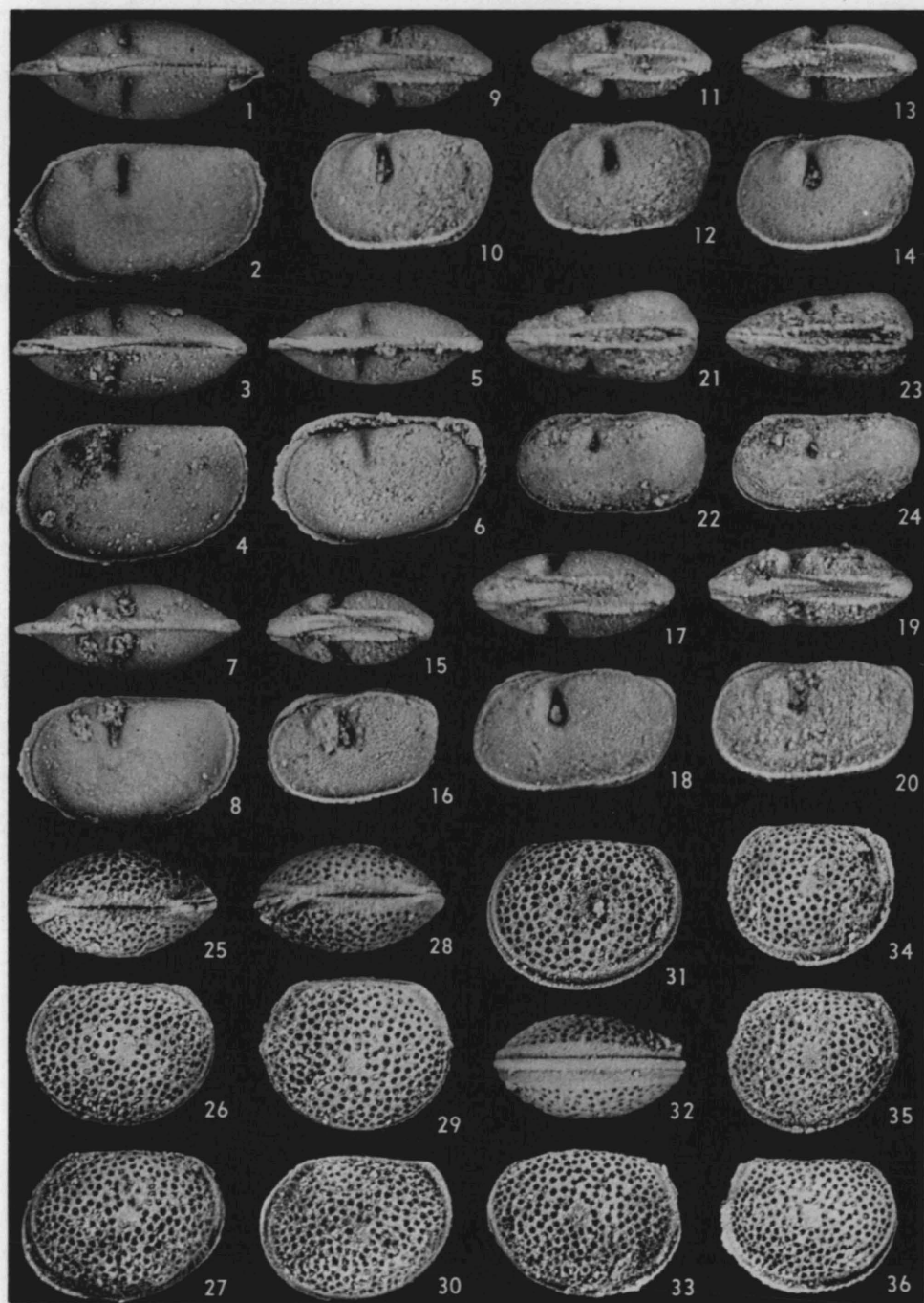
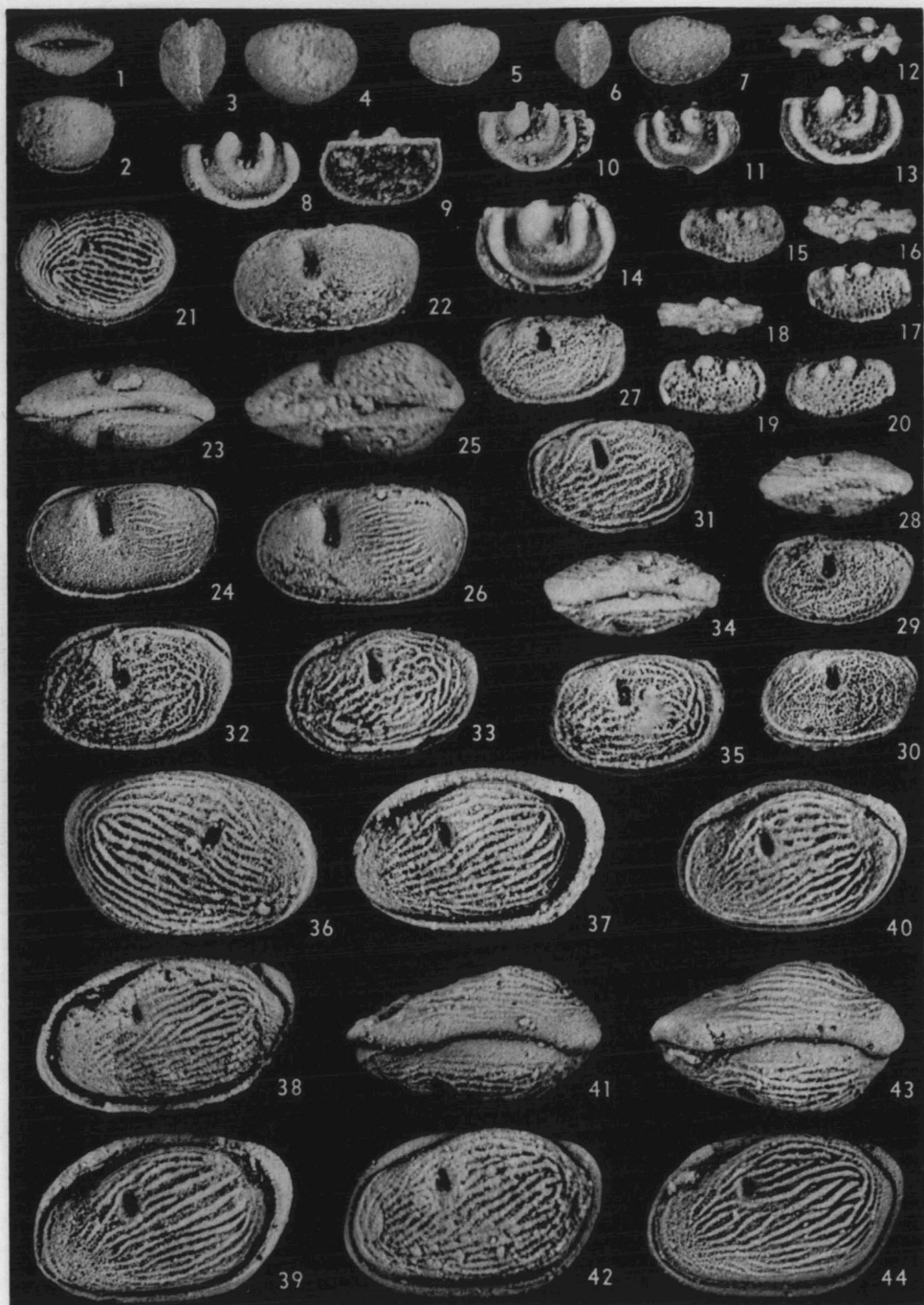


PLATE II



EXPLANATION OF PLATE II

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(All figures $\times 31$)

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PLATE III

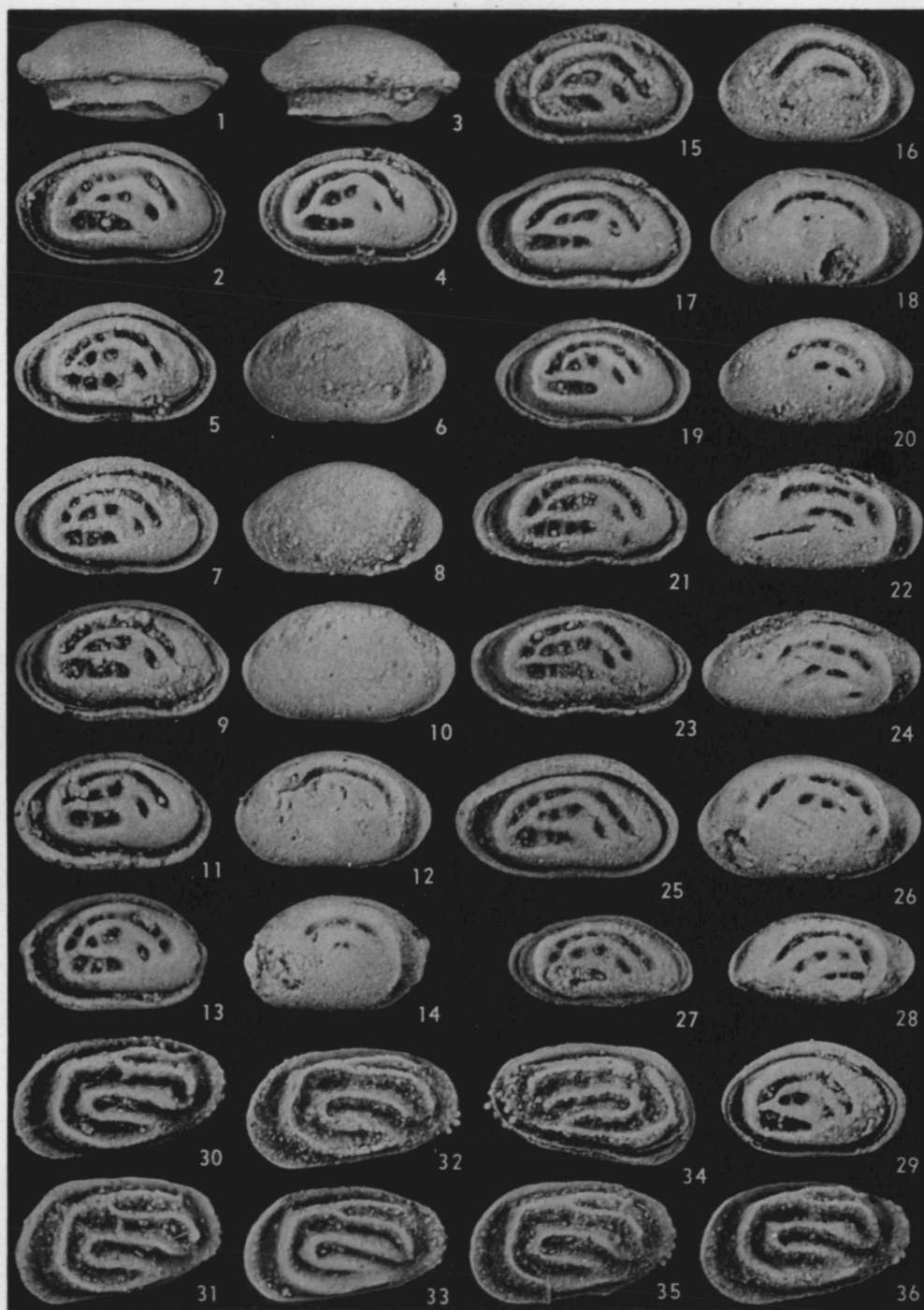
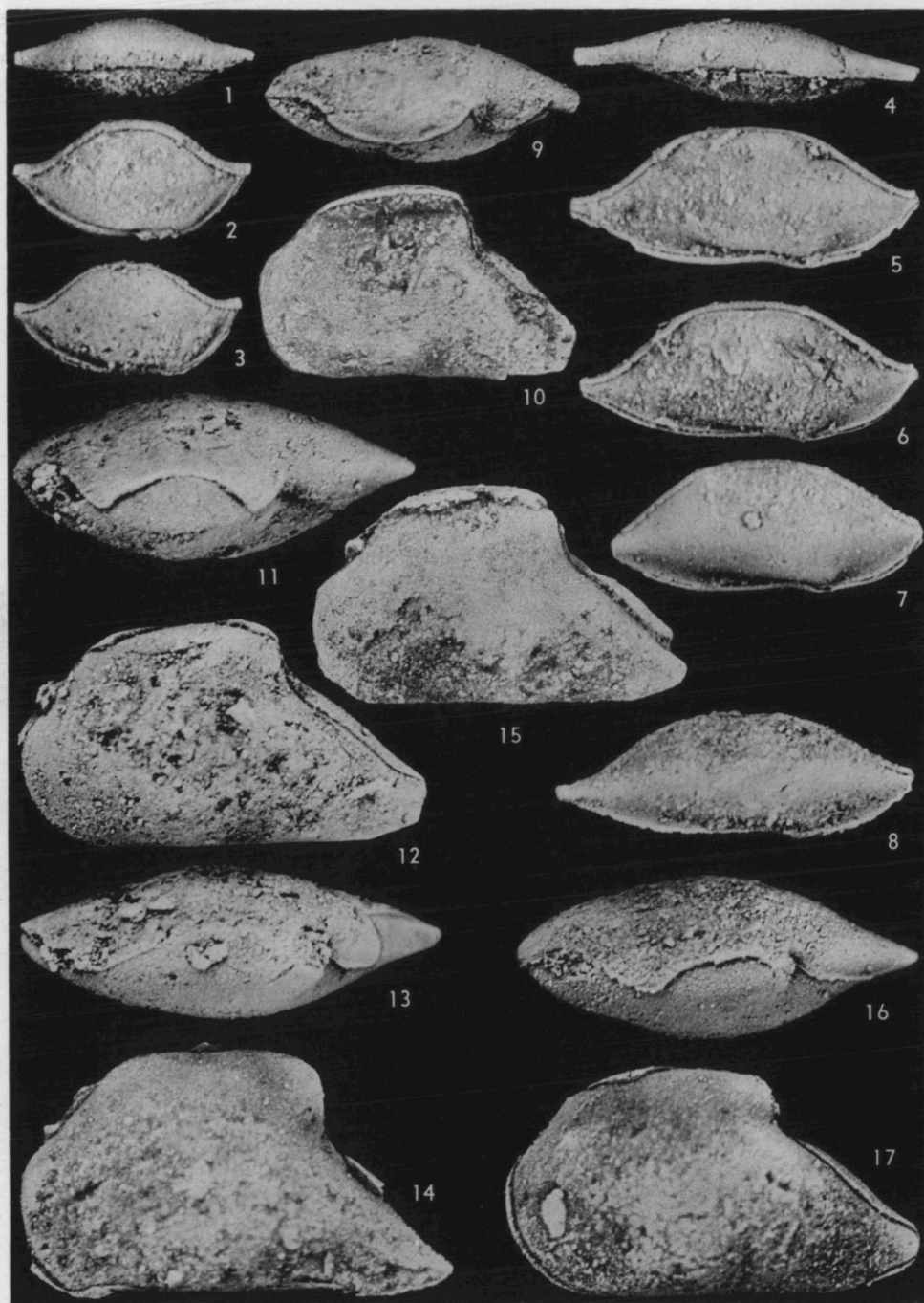


PLATE IV



EXPLANATION OF PLATE IV

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VOLUME X

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